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Wm. David Salisbury
Mississippi State University

W. J. Reeves
University of Calgary

Wynne W. Chin
University of Calgary

Martin Bell
Mississippi State University

Robbing Peter to Pay Paul: The Other Side of Group Support Systems*

Wm. David Salisbury-Mississippi State University, Starkville, Mississippi, USA
W. J. Reeves-University of Calgary, Calgary, Alberta, Canada
Wynne W. Chin-University of Calgary, Calgary, Alberta, Canada
Martin Bell-Mississippi State University, Starkville, Mississippi, USA
Abhijit Gopal-University of Calgary, Calgary, Alberta, Canada

Abstract

That Group Support Systems (GSS) can enhance group performance appears to be the case. However, GSS research has drawn heavily from a rational perspective, one that may not be able to comprehend the full range of phenomena at play in group meetings. Although a social perspective may provide greater explanatory power, little has been done to investigate GSS phenomena from this viewpoint. This paper considers more fully the social impacts of GSS by varying levels of GSS restrictiveness and assessing the effect that this may have on group cohesiveness. We find that groups in the more restrictive treatment experienced lower perceived cohesiveness than did those in the non-restrictive treatment.

Introduction

The fact that groups are extremely important in organizational work is well documented (Hackman and Kaplan, 1974; Drucker, 1988). The failures of groups to make efficacious decisions is equally well-documented (Janis, 1982). Group Support Systems (GSS) offer a computer-based solution to this problem intended to help groups structure their interaction and process information more effectively (DeSanctis and Gallupe, 1987; Nunamaker, Dennis, Valacich, Vogel, and George, 1993, Jessup and Valacich, 1993).

Because the premise on which GSS have typically been developed is that groups are unable to properly manage the information necessary to reach quality decisions, imposed structure and information processing have been key elements in GSS design (Clapper and Prasad, 1993). These do appear in general to enhance group performance. However, research outcomes from the rational or performance school have been rather inconsistent when interaction outcomes such as group consensus are considered (Dennis and Gallupe, 1993). This has led some GSS authors to suggest that that groups are more than information processing bodies; they also have a social aspect that has gone largely neglected in the GSS literature (Poole and DeSanctis, 1990; DeSanctis and Poole, 1994; Clapper and Prasad, 1993; cf. McGrath, 1984, Clapper, McLean and Watson, 1991; DeSanctis, 1993).

This paper will further explore the social aspects of a GSS intervention into group work. We suggest that GSS may be viewed as a means to structure interaction among group participants. We further suggest that, while GSS may indeed improve group performance, the role GSS has in structuring group interaction may have the undesired effect of suppressing group formation. We first discuss GSS impacts on social outcomes from group interaction, and then discuss the importance of a particular social group outcome, group cohesiveness (Bollen and Hoyle, 1990). We then present the results of a laboratory experiment in which one set of groups was provided with a restrictive (Silver, 1991; Wheeler and Valacich, 1996, Wheeler, Mennecke and Scudder, 1993) GSS structure (greater imposed structure), and the other set of groups were provided with a non-restrictive treatment (less imposed structure). The effect of more or less restrictive GSS structure on group cohesiveness is assessed.

GSS Effects on Social Outcomes

In terms of its influence on social group outcomes, the most prominent feature of GSS may not be the information processing and communication that are provided, but the capacity of computer supported meeting processes to reduce information available to individual group members that may be necessary for the formation of group norms. One of the earliest assertions of the importance of GSS technology is that it

could be designed in such a way as to reduce conformity to social psychological pressures of the group, which can lead to "groupthink" (Janis, 1982), e.g. by providing anonymity (Dennis, George, Jessup, Nunamaker and Vogel, 1988).

The reduction in social interaction tends to reduce conformity. It may also have an impact on the more social outcomes of interest to GSS researchers, such as cohesiveness, satisfaction, commitment, and perceived decision quality. Social interaction should favorably influence all of these variables (Collins, 1992), and to limit social interaction may also negatively influence these social outcomes of group meetings.

On one hand, GSS does appear to enhance performance on more rational or performance based variables such as decision quality and alternatives generated. On the other hand, it also appears to detract from the ability of the group to form the norms that lead to satisfaction, cohesiveness, consensus and commitment (for meta-analyses see McLeod, 1991 and Benbasat and Lim, 1994). The dual outcomes from GSS provision suggests that the social aspect of the GSS intervention merits further investigation.

Importance of Cohesiveness

Group cohesiveness has been an active part of research in almost every domain of psychology that deals with group behavior (Chin, Salisbury and Gopal, 1996). Cohesiveness is often viewed as a mediator of group formation, maintenance, and productivity. The most visible use of the construct of cohesiveness over the years has been to link it as a predictor of group performance. Perceived cohesiveness encompasses an individuals sense of *belonging* to a particular group and his or her feelings of *morale* associated with membership in the group (cf. Bollen and Hoyle, 1991). Thus, perceived cohesiveness reflects an individual's appraisal of their relationship to the group. Such a perception by individuals relative to their group could be linked to group formation, maintenance, or even productivity in some situations.

Hypotheses

If the process of creating group cohesiveness can be seen as a social process, this should be affected by the provision of greater structure using a GSS, just as have other social variables. Consequently, our first hypothesis regarding the influence of restrictive structure on GSS-supported groups is as follows:

Hypothesis 1: Perceived cohesiveness will be greater in non-restrictive GSS groups than in restrictive GSS groups.

In addition to viewing cohesion as a global construct, Bollen and Hoyle (1990) suggest that it may be comprised of two constructs, belonging and morale. Chin et al. (1996) present evidence that the sub-dimensions of belonging and morale are indeed separate constructs. Consequently, we have decided to generate hypotheses about these as well, described by Hypothesis 2:

Hypothesis 2a: Perceived morale will be higher in non-restrictive GSS groups than in restrictive GSS groups.

Hypothesis 2b: Perceived belonging will be higher in non-restrictive GSS groups than in restrictive GSS groups.

Methodology

To test the effect of restrictiveness on cohesiveness, belonging and morale, a laboratory experiment was performed. One-half of the groups received a restrictive treatment, in which the facilitator led the groups through an on-screen agenda, limiting the range of options for using the system. The other groups received a non-restrictive treatment in which they were allowed to use (or not use) the GSS in any manner they

wished. The GSS used was *VisionQuest*, a product of Collaborative Technologies Corporation. *VisionQuest* tools used included *Brainwriting*, *Voting*, *Ranking*, and *Rating*. Group participants were seated around a table with a PC available to each. Both sets of groups were trained in using the GSS. The task was the "School of Business Policy Task" (Wheeler and Mennecke, 1992), a *hidden profile* (Stasser, 1992) task, in which each group member is made aware of only a portion of the task information, requiring the group to work together to reach a solution.

The subjects in the present study were 228 undergraduate subjects (participating in 5-person groups) drawn from an introductory MIS class at a western Canadian university comprised mainly of third year students. The sessions were run during the third through fifth week of the semester, and the groups were meeting for the first time. The total session time was about three hours, with 1 hour and 10 minutes of this time devoted to task performance.

Some cases were eliminated from the analysis for the following reasons. Some cases were dropped due to missing responses on questionnaire items, and others were dropped because subject absences created some groups with more than 5 members. This left the study with 177 subjects.

Participants analyzed in the study were from groups that had 5 participants. Groups were balanced on gender (91 males and 86 females overall) such that no group included more than 60 per cent of one gender, (cf. Kanter, 1977). The mean age of the subjects was 21.61 (s.d. = 3.52) with work experience of 20.01 months (s.d. = 29.48) and GPA of 2.83 (s.d. = 0.48). The mean number of previous exposures to GSS was 0.74 (s.d. = 2.49).

The dependent constructs were group cohesiveness (H1), belonging (H2a) and morale (H2b). The scales used to capture these are derived from Bollen and Hoyle (1990) by Chin et al. (1996) and applied to small group work. These scales have demonstrated favorable psychometric properties in previous research.

Results

Before proceeding with the analysis, it was important to determine if there was any between group difference in the dependent constructs (cf. Hoyle and Crawford, 1994). ANOVA was run within each treatment with group membership as the independent variable, and no significant differences were identified within treatment due to group membership. Consequently, the individual was used as the level of analysis.

For cohesion, the scores on the six-item Chin et al. (1996) scale were summed for each individual to create an aggregated perceived cohesiveness score for each participant. A similar procedure was performed for belonging and morale, using the relevant items. One-way ANOVA was performed with restrictiveness (high or low) as the independent treatment.

Our findings are summarized in Table 1. The data seem to indicate support for Hypothesis 1, suggesting that cohesiveness was lower in groups receiving the restrictive treatment than for those receiving the non-restrictive treatment. The mean summed cohesiveness score in non-restrictive groups was greater than that for the restrictive groups it was (31.565 versus 29.098), and this difference was significant at the α=0.05. Support is also indicated for Hypothesis 2a, in that morale appears to be higher in the non-restrictive groups than in the restrictive groups (15.329 versus 13.913), which is also significant at α=0.05. On the other hand, we did not find support for Hypothesis 2b, in that there was no significant difference in belonging between groups in the non-restrictive treatment and those in the restrictive treatment, although the mean non-restrictive mean treatment (16.235) was greater than the restrictive mean (15.185).

Table 1-Hypotheses and findings
H1: Perceived cohesiveness will be higher in non-restrictive GSS groups than in restrictive GSS groups.

Mean (Restrictive)	Mean (Non-Restrictive)	F	d.f	p	Hypothesis Supported?
29.098	31.565	5.160	176	0.024	Yes.
H2a: Perceived morale will be higher in non-restrictive GSS groups than in restrictive GSS groups.					
Mean (Restrictive)	Mean (Non-Restrictive)	F	d.f	p	Hypothesis Supported?
13.913	15.329	5.933	176	0.016	Yes.
H2b: Perceived belonging will be higher in non-restrictive GSS groups than in restrictive GSS groups.					
Mean (Restrictive)	Mean (Non-Restrictive)	F	d.f	p	Hypothesis Supported?
15.185	16.235	3.518	176	0.062	No.

Discussion and Conclusion

The present study suggests that a more restrictive structure does tend to inhibit group cohesiveness as an overall construct, and also appears to inhibit feelings of belonging and morale. It would appear that morale might indicate a socially created meaning has been developed in group interaction (Huang, Wei, Watson, Lim and Bostrom, 1996; cf. Salisbury, 1996). In other words, in the non-restrictive groups, the process of working out how the GSS would be used left the group feeling that they understood what they were doing more so than did the restrictive groups, which led to higher feelings of morale.

That the treatment did not significantly influence belonging may make sense in light of the ad-hoc nature of the groups. That belonging even approached significance, however, may be interesting, in that the group interaction process in creating meaning for their participation may have created some sense of belonging (Salisbury, 1996). Collins (1988, 1992) suggests that participating in any shared ritual may enhance feelings of belonging, and, while the difference for this construct did not attain significance, it should not be ignored, either.

In the present study, it is suggested that the restrictive structure made the intent of the GSS intervention more explicit, and hence restrictive-treatment groups perceived no need to interact with one another in order to resolve how to proceed-this was made clear by the agenda. While this reduced interaction may be desirable in order to enhance task performance by letting participants "get down to work", it does appear to inhibit more social phenomena such as group cohesiveness. We suggest that more research should be done in order to suggest how GSS support may be able to help enhance both rational and social outcomes, rather than optimizing one at the expense of the other.

References available on request from first author.